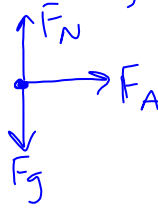
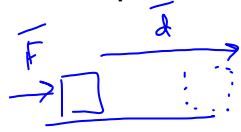


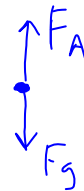
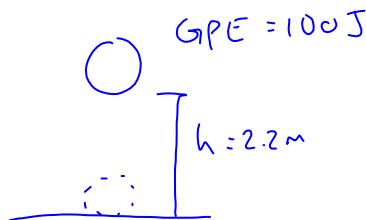
- 1) A box is pushed across the table with a force of 13.77 N and 37.84 J of work is done. What is the displacement of the box? *Ignore friction*



$$W = Fd$$

$$d = \frac{W}{F} = \frac{37.84 \text{ J}}{13.77 \text{ N}} = 2.75 \text{ m}$$

- 2) A ball is lifted to 2.2 m above the ground to a gravitational potential energy of 100 J. What is the mass of the ball? *Ball not accelerating*



$$GPE = mgh$$

$$m = \frac{GPE}{gh} = \frac{100 \text{ J}}{(2.2 \text{ m})(9.8 \text{ m/s}^2)} = 4.64 \text{ kg}$$

- 3) A ball with mass 0.16 kg is thrown with 32 J of kinetic energy. What is the velocity of the ball?

$\vec{v} \rightarrow +$ $KE = 32 \text{ J}$

$m = 0.16 \text{ kg}$



Yes air resistance

$$KE = \frac{1}{2} m v^2$$

$$\pm \sqrt{v^2} = \pm \sqrt{\frac{2(KE)}{m}}$$

$$\begin{aligned} v &= \sqrt{\frac{2(KE)}{m}} \\ &= \sqrt{\frac{2(32 \text{ J})}{0.16 \text{ kg}}} \\ &= 20 \text{ m/s} \end{aligned}$$

$$\text{Total Mechanical Energy} = \text{GPE} + \text{KE}$$

	<u>GPE</u>	<u>KE</u>	<u>Total</u>
10m ○	100 J	0 J	100 J
7.5m ↓	75 J	25 J	100 J
5m	50 J	50 J	100 J
2.5m	25 J	75 J	100 J
0m	0 J	100 J	100 J

Charging cell phone:

Electrical \rightarrow chemical potential \rightarrow
(wall) (battery)

Light + Thermal + Electrical + Sound